

## WHAT IS CLAIMED IS:

1. A radio apparatus characterized in that directional patterns of antennas are varied so as to transmit signals to a terminal apparatus which is a targeted communication party, in order to prevent a virtually intercepting terminal apparatus, which is an unintended communication party, from continuously receiving the signals.

2. A radio apparatus, including:

a computing unit which computes a received response vector of a terminal apparatus which is a targeted communication party, based on signals received from the targeted terminal apparatus;

an acquiring unit which acquires a virtual response vector of a virtual terminal apparatus different from the targeted terminal apparatus;

a generator which generates a transmission weight vector based on the received response vector computed by said computing unit and the virtual response vector acquired by said acquiring unit; and

a transmitter which transmits a predetermined signal to the targeted terminal apparatus based on the transmission weight vector generated by said generator,

wherein said acquiring unit acquires again, as appropriate, a virtual response vectors and the thus

reacquired virtual response vector is again subject to the processings by said generator and said transmitter.

3. A radio apparatus according to Claim 2, wherein said acquiring unit reacquires, as appropriate, a virtual response vector whose value of correlation with the received response vector computed by said computing unit is less than or equal to a predetermined threshold value, and the thus reacquired virtual response vector is again subject to the processings by said generator and said transmitter.

4. A radio apparatus according to Claim 3, wherein said acquiring unit further includes:

- a storage which stores a plurality of virtual response vectors whose values of mutual correlation therewith are less than or equal to a predetermined threshold value; and

- a selector which selects a virtual response vector from the plurality of virtual response vectors stored in said storage.

5. A radio apparatus according to Claim 3, further including:

- a measuring unit which measures the intensity of a signal received from the targeted terminal apparatus; and

- an intensity determining unit which instructs said acquiring unit to switch to the virtual response vector

whose value of correlation with the received response vector computed by said computing unit becomes less than or equal to a predetermined threshold value if a signal strength value of the targeted terminal apparatus, which is calculated from the transmission weight vector, the received response vector and information on the intensity of the received signal measured by said measuring unit, is less than or equal to a threshold value.

6. A radio apparatus according to Claim 3, further including:

a measuring unit which measures the intensity of a signal received from the targeted terminal apparatus; and

an intensity determining unit which instructs said acquiring unit to increase the intensity of signals to be transmitted to the targeted terminal apparatus if a signal strength value of the targeted terminal apparatus, which is calculated from the transmission weight vector, the received response vector and information on the intensity of the received signal measured by said measuring unit, is less than or equal to a threshold value.

7. A radio apparatus according to Claim 5, wherein said intensity determining unit estimates the signal strength value of the targeted terminal apparatus from a value of correlation between the received response vector and the

virtual response vector.

8. A transmission method characterized in that signals are transmitted to a terminal apparatus, which is a targeted communication party, by varying a directional pattern of an antenna so that a potentially or virtually intercepting terminal apparatus different from the targeted terminal apparatus cannot receive continuously the signals.

9. A transmission method which performs a control such that a value of the intensity of a signal received by a terminal apparatus, which is a targeted communication party, is maintained at a predetermined value, and varied as appropriate is a direction in which a value of signal strength for a terminal apparatus which is other than the targeted terminal apparatus.

10. A transmission method which generates a transmission weight vector used in transmitting a predetermined signal to a terminal apparatus, which is a targeted communication party, from a received response vector of the targeted terminal apparatus and a virtual response vector of a potentially or virtually intercepting terminal apparatus, and which performs a control in such a manner that the virtual response vector is changed, as appropriate, to a virtual response vector having a different value from the

virtual response vector.

11. A transmission method, including:

    computing a received response vector of a terminal apparatus which is a targeted communication party, based on signals received from the targeted terminal apparatus;

    acquiring a virtual response vector of a virtual terminal apparatus which is not the targeted terminal apparatus;

    generating a transmission weight vector based on the received response vector computed in said computing and the virtual response vector acquired in said acquiring; and

    transmitting a predetermined signal to the targeted terminal apparatus based on the transmission weight vector generated by said generating,

    wherein said acquiring a virtual response vector is such that a virtual response vector is acquired again, as appropriate, and the thus reacquired virtual response vector is again subject to the processings by said generating a transmission weight vector and said transmitting a predetermined signal.

12. A transmission method according to Claim 11, wherein said acquiring a virtual response vector is such that a virtual response vector whose value of correlation with the received response vector computed by said computing is less

than or equal to a predetermined threshold value is reacquired, as appropriate, and the thus reacquired virtual response vector is again subject to the processings by said generating a transmission weight vector and said transmitting a predetermined signal.

13. A transmission method according to Claim 12, wherein said acquiring a virtual response vector further includes:

storing a plurality of virtual response vectors whose values of mutual correlation therewith are less than or equal to a predetermined threshold value; and

selecting a virtual response vector from the plurality of virtual response vectors stored in said storing.

14. A transmission method according to Claim 12, further including:

measuring the intensity of a signal received from the targeted terminal apparatus; and

instructing said acquiring a virtual response vector to switch to a virtual response vector whose value of correlation with the received response vector computed by said computing becomes less than or equal to a predetermined threshold value if a signal strength value of the targeted terminal apparatus, which is calculated from the transmission weight vector, the received response vector and information on the intensity of the received signal measured

by said measuring unit, is less than or equal to a threshold value.

15. A transmission method according to Claim 12, further including:

measuring the intensity of a signal received from the targeted terminal apparatus; and

instructing said transmitting a predetermined signal to increase the intensity of signals to be transmitted to the targeted terminal apparatus if a signal strength value of the targeted terminal apparatus, which is calculated from the transmission weight vector, the received response vector and information on the intensity of the received signal measured by said measuring unit, is less than or equal to a threshold value.

16. A transmission method according to Claim 14, wherein said instructing to switch to a virtual response vector is such that the signal strength value of the targeted terminal apparatus is estimated from a value of correlation between the received response vector and the virtual response vector.

17. A transmission method according to Claim 15, wherein said instructing to increase the intensity of signals is such that the signal strength value of the targeted terminal apparatus is estimated from a value of correlation between

the received response vector and the virtual response vector.

18. A program executable by a computer, the program including the functions of:

    computing a received response vector of a terminal apparatus which is a targeted communication party, based on signals received from the targeted terminal apparatus;

    acquiring a virtual response vector of a virtual terminal apparatus different which is not the targeted terminal apparatus;

    generating a transmission weight vector based on the received response vector computed in said computing and the virtual response vector acquired in said acquiring; and

    transmitting a predetermined signal to the targeted terminal apparatus based on the transmission weight vector generated by said generating,

    wherein said acquiring a virtual response vector is such that a virtual response vector is acquired again, as appropriate, and the thus reacquired virtual response vector is again subject to the processings by said generating a transmission weight vector and said transmitting a predetermined signal.

19. A program according to Claim 18, wherein said acquiring a virtual response vector is such that a virtual response vector whose value of correlation with the received response



vector computed by said computing is less than or equal to a predetermined threshold value is reacquired, as appropriate, and the thus reacquired virtual response vector is again subject to the processings by said generating a transmission weight vector and said transmitting a predetermined signal.

20. A program according to Claim 19, wherein said acquiring a virtual response vector further includes:

storing a plurality of virtual response vectors whose values of mutual correlation therewith are less than or equal to a predetermined threshold value; and

selecting a virtual response vector from the plurality of virtual response vectors stored in said storing.

21. A program according to Claim 19, further including:

measuring the intensity of a signal received from the targeted terminal apparatus; and

instructing said acquiring a virtual response vector to switch to a virtual response vector whose value of correlation with the received response vector computed by said computing becomes less than or equal to a predetermined threshold value if a signal strength value of the targeted terminal apparatus, which is calculated from the transmission weight vector, the received response vector and information on the intensity of the received signal measured by said measuring unit, is less than or equal to a threshold

value.

22. A program according to Claim 19, further including:

measuring the intensity of a signal received from the targeted terminal apparatus; and

instructing said transmitting a predetermined signal to increase the intensity of signals to be transmitted to the targeted terminal apparatus if a signal strength value of the targeted terminal apparatus, which is calculated from the transmission weight vector, the received response vector and information on the intensity of the received signal measured by said measuring unit, is less than or equal to a threshold value.

23. A transmission method according to Claim 19, wherein said instructing to switch to a virtual response vector is such that the signal strength value of the targeted terminal apparatus is estimated from a value of correlation between the received response vector and the virtual response vector.

24. A program according to Claim 22, wherein said instructing to increase the intensity of signals is such that the signal strength value of the targeted terminal apparatus is estimated from a value of correlation between the received response vector and the virtual response vector.